

REMARKS

Claims 1-28 are currently pending in the application, with claims 1, 4, 7, 22, 24 and 26 being independent. Claims 1-28 were pending prior to the Office Action. In this Reply, claims 1, 4, 7, 22, 24 and 26 have been amended.

The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein. Applicant respectfully requests favorable consideration thereof in light of the comments contained herein, and earnestly seeks timely allowance of the pending claims.

Claim Rejections – 35 USC § 103

The Examiner rejected claims 1-6, 10, 14, 16, 19, 21 and 23 under 35 U.S.C. § 103(a) as being unpatentable over US 5,345,313 (“Blank”) in view of US 5,978,100 (“Kinjo”). The Examiner rejected claims 7-9, 22 and 24-26 under 35 U.S.C. § 103(a) as being unpatentable over US 5,577,179 (“US 5,577,179”) in view of Kinjo. The Examiner rejected claims 11-12 and 17-18 under 35 U.S.C. § 103(a) as being unpatentable over Blank in view of Kinjo and in further view of US 5,577,179. The Examiner rejected claims 13, 15 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Blank in view of Kinjo and in further view of US 2003/0058939 (“Lee”). The Examiner rejected claims 27-28 under 35 U.S.C. § 103(a) as being unpatentable over Blank in view of Kinjo and in further view of US 5,630,037 (“Schindler”).

The Applicant respectfully traverses these rejections.

Applicant has amended independent claims 1, 4, 7, 22, 24 and 26.

Applicant has amended claim 1 to recite determining, based on geometric criteria, a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary; and applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image.

Applicant has amended claim 4 to recite a judging device which determines, based on geometric criteria, a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary; and an image correcting device

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which applies correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image.

Applicant has amended claim 7 to recite identifying, in the detected boundary, based on geometric criteria, a boundary part representing a contour of the person with low certainty; and applying correction processing to the boundary part, which is less than the entire detected boundary, for concealing the boundary part in the created composite image.

Applicant has amended claim 22 to recite applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image.

Applicant has amended claim 24 to recite an image correcting device which applies correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image.

Applicant has amended claim 26 to recite applying correction processing to the boundary part, which is less than the entire detected boundary, for concealing the boundary part in the created composite image.

To establish a *prima facie* case of obviousness, the Examiner has the burden of meeting the basic criterion that the prior art must teach or suggest all of the claim limitations.

Regarding this basic criterion, the Applicant submits that the cited references do not disclose or suggest all the elements of independent claims 1, 4, 7, 22, 24 and 26, as explained below.

Blank does not disclose or suggest determining [...] a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary, as recited in claim 1. The Examiner acknowledged that Blank is silent and does not disclose a determining step (page 3 of the Office Action). Since Blank does not disclose or suggest determining a level of certainty, Blank also does not disclose or suggest determining, based on geometric criteria, a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary, as recited in claim 1.

Blank also does not disclose or suggest applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image, as recited in claim 1.

As explained above, Blank does not determine [...] a level of certainty as to whether or not the detected boundary is a true contour of the person. Since no such determination is performed in Blank, Blank cannot then apply correction processing to a boundary part [...] which is judged not to be a true contour of the person.

In addition, the fuzzing function performed by transputer 44 in Blank to reduce the fuzzy edge 66 to a smooth edge (Fig. 5E, col. 9 lines 30-60) is not a step that "applies correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image." This fuzzing function performed by transputer 44 to reduce the fuzzy edge 66 to a smooth edge is performed on the original image 54 including the original background 24 (Fig. 5A). Hence, the fuzzing function is not performed in the created composite image.

Furthermore, the fuzzing function is applied indiscriminately to all pixels of the edge of human 22 (col. 9 lines 59-60). The fuzzing function is not applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, as claim 1 recites.

The blending function of Blank is not a step of applying correction processing either. To blend the person 22 into a preselected background, the processor of Blank averages the hue of the edge of the human and the hue of the portion of the preselected background that is contiguous to the edge. The processor then adjusts the hue of the edge of the human to equal the averaged hue (col. 4 lines 22-27). During blending, the transputer 44 sets the hue of each edge pixel to the average hue of the edge pixel and a pixel adjacent to it (col. 13 lines 19-42). The transputer performs the blending function for all edge pixels (col. 13 lines 39-41).

Blending is performed to adjust the edge of the object 22 to the surrounding background and sharpen the edge of the object (col. 13 lines 15-17). Hence, the blending in Blank is applied indiscriminately to all pixels of the edge of human 22 in a composite image (col. 13 lines 39-41,

col. 9 lines 58-60), because the goal of blending is to adjust the edges of the human 22 to the surrounding background and sharpen the edge of the object throughout the picture. It is unreasonable to perform blending for only some portions of the boundary in Blank, because the resulting picture would look bad.

In Blank, a hue gamma value change sets gamma value of the entire object based on a reference value (col. 13 lines 60-62 and 65-68, and Fig. 12). Hence, a gamma value change is applied to all object pixels. The goal of hue gamma change is to change lighting conditions of the object and the background. Logically, lighting conditions are adjusted for the whole image, to produce an adequate image result.

Therefore, the blending/hue gamma change function is applied indiscriminately to all pixels of the edge of human 22 (col. 9 lines 59-60). The blending function is not applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, as claim 1 recites.

Therefore, Blank fails to teach or suggest all of the elements for claim 1.

Independent claim 4 defines over Blank at least based on reasoning similar to that set forth above.

US 5,577,179 (which is a continuation-in-part of Blank) does not disclose or suggest determining, based on geometric criteria, a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary; and applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image, as recited in claim 1.

US 5,577,179 does not disclose or suggest determining, based on geometric criteria, a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary, as recited in claim 1. US 5,577,179 also does not disclose or suggest "applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image", as recited in claim 1.

The Examiner alleged (page 8 of the Office Action) that US 5,577,179 discloses correction processing at col. 16, lines 50-53, and col. 17, lines 4 and 23.

At col. 16, lines 50-53 in US 5,577,179, a blending operation is described. The blending operation blends the aforementioned three pixels to the background layer directly below the current object layer. For each of the three pixels, the computer 130 determines the hue of the background pixel in the layer beneath the object pixel, and then averages the hue value of each of the three background pixels with the corresponding object pixel (col. 16 lines 50-58). This blending is not correction processing to the boundary part, for concealing the boundary part representing a contour of the person with low certainty. The blending is performed for all edge pixels, and not for a boundary part representing a contour of the person with low certainty. The goal of blending is to blend the object edge to the background layer directly below the current object layer. Logically, this blending operation is performed for the whole edge of the object, or else the resulting picture would look bad. The blending function does not apply correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, as claim 1 recites.

At col. 17, line 4 in US 5,577,179, a fuzz operation is described. The fuzz operation smoothes the edge of the object. The computer 130 determines the hue of three pixels immediately adjacent to edge pixels on the same row, determines the average hue value of the three-pixel interval, and sets the hue value of each of the edge pixels equal to the determined average (col. 17 lines 4-11). The fuzz operation is not correction processing to the boundary part, for concealing the boundary part representing a contour of the person with low certainty. The fuzz operation is performed for all edge pixels. The goal of the fuzz operation is to smooth out the object edge. Logically, this fuzz operation is performed for the whole edge of the object, or else the resulting image would look bad. The fuzz operation does not apply correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, as claim 1 recites.

At col. 17, line 23 in US 5,577,179, a gradient sharpening function is described. The gradient sharpening function enhances the object edges (col. 17 lines 23-24). The gradient sharpening function is not correction processing as recited in claim 1, because no boundary part

which is judged not to be a true contour of the person has been identified. Furthermore, the gradient sharpening function is applied to all pixels of the object edges and, hence, does not apply correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image.

Therefore, US 5,577,179 fails to teach or suggest all of the elements for claim 1. US 5,577,179 also fails to teach or suggest all of the elements for claims 4 and 7. US 5,577,179 also does not teach or suggest applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image, as recited in claim 22. US 5,577,179 also fails to teach or suggest all of the elements for claims 24 and 26.

The Examiner alleged that Kinjo discloses determining [...] a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary. The Examiner pointed to col. 21 lines 15-40 in Kinjo and mentioned the weighting coefficients of Kinjo.

In Kinjo, a face candidate region is extracted from an original image by each of many extracting units, and the regions are respectively weighted by the weighting coefficients set for the respective extracting methods used by each extracting unit (col. 21 lines 15-20). With this analysis, Kinjo determines a region having the highest probability of being a region corresponding to the facial region of a human figure (facial region) (col. 21 lines 33-37).

Claim 1 recites "determining, based on geometric criteria, a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary." Kinjo does not disclose or suggest determining [...] a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary. While Kinjo analyses each region of the image to determine whether it is a face, Kinjo does not analyze each part of a detected boundary of such a region as is recited in claim 1 (col. 18 lines 45-60 and lines 10-16 in Kinjo describe general methods of analyzing regions to determine if they are facial regions; however, determining a level of certainty [...] for each part of a detected boundary is not disclosed in Kinjo).

Kinjo also does not disclose or suggest applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image, as recited in claim 1. Kinjo does not discuss correction processing. Application of correction processing to a boundary part which is less than an entire detected boundary is not disclosed in Kinjo.

Therefore, Kinjo fails to teach or suggest all of the elements for claim 1. Kinjo also fails to teach or suggest all of the elements for claims 4 and 7. Kinjo also does not teach or suggest applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image, as recited in claim 22. Kinjo also fails to teach or suggest all of the elements for claims 24 and 26.

Lee is not concerned with levels of certainty and with correction processing. Hence, Lee does not disclose or suggest determining, based on geometric criteria, a level of certainty as to whether or not the detected boundary is a true contour of the person for each part of the detected boundary; and applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image, as recited in claim 1. Independent claim 4 defines over Lee at least based on reasoning similar to that set forth above.

On page 16 of the Office Action, the Examiner alleged that, in Schindler, fringe pixels located near the foreground represent a boundary part with low certainty.

Applicant submits that Schindler does not disclose or suggest determining, based on geometric criteria, a level of certainty as to whether or not a detected boundary is a true contour of the person for each part of a detected boundary. In Schindler, fringe region 131 (Applicant does not admit that fringe region 131 is a boundary part with low certainty) is not determined based on geometric criteria. Schindler uses only non-geometric criteria (pixel color criteria) to determine the fringe region 131 (col. 15 lines 38-55, Fig. 5 in Schindler).

Schindler also does not disclose or suggest applying correction processing to a boundary part which is less than the entire detected boundary and which is judged not to be a true contour of the person, for concealing the boundary part, in the created composite image, as recited in

claim 1. Specifically, Schindler does not state that the fringe region 131 is a boundary part which is less than the entire detected boundary. Hence, Schindler fails to teach or suggest all the elements for claim 1. Independent claim 4 defines over Schindler at least based on reasoning similar to that set forth above.

Therefore, the cited references fail to teach or suggest all of the elements of independent claims 1, 4, 7, 22, 24 and 26.

For all of the above reasons, taken alone or in combination, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejections of claims 1, 4, 7, 22, 24 and 26. Claims 2-3, 10-15, 21 and 27 depend from claim 1 and are allowable at least by virtue of their dependency. Claims 5-6, 16-20, 23 and 28 depend from claim 4 and are allowable at least by virtue of their dependency. Claims 8-9 and 25 depend from claim 7 and are allowable at least by virtue of their dependency.

CONCLUSION

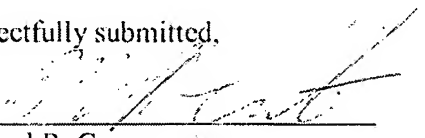
In view of the above amendments and remarks, this application appears to be in condition for allowance and the Examiner is, therefore, requested to reexamine the application and pass the claims to issue.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Corina E. Tanasa, Limited Recognition No. L0292 under 37 CFR §11.9(b), at telephone number (703) 208-4003, located in the Washington, DC area, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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